

REMARKS

The Office Action mailed December 15, 1999, has been reviewed and the examiner's comments have been considered. Claims 1-23 were pending in the application. Claims 1, 8, and 23 have been amended, new claim 24 has been added and no claims have been cancelled. Therefore, claims 1-24 are pending and are submitted for reconsideration by the examiner.

Applicants sincerely thank the examiner for indicating that claims 8-9 contain allowable subject matter. Accordingly, claim 8 has been placed in independent form, including all the limitations of the base claim and any intervening claims, and claim 9 depends therefrom. Therefore, claims 8 and 9 are now in condition for allowance in accordance with the indications in the Office Action.

With respect to the objection to the disclosure regarding the figures, applicants concurrently submit herewith a Proposed Changes to the Drawings, with figures 1-11 referenced in the specification. These figures are described extensively in the specification and are identical to the figures in the provisional application 60/059,727, which is explicitly incorporated by reference in the originally filed specification at page 60, lines 25-29. Applicants' representative hereby states that the attached drawings consist of the same material incorporated by reference in the original specification.

In the Office Action, claims 10 and 23 are rejected under 35 U.S.C. § 112, second paragraph, as indefinite because they contain limitations directed to READS. In reply, applicants have amended the specification to specify the expansion of the READS acronym which is well known to those skilled in the relevant art. For example, the READS analysis is disclosed in U.S. patent number 6,010,850 and U.S. patent number 5,712,126. Claim 23 has been amended to correct its dependency. Accordingly, applicants submit that the claims 10 and 23 are now in definite form and meet the requirements of § 112, second paragraph.

Claims 1-7 are rejected under 35 U.S.C. § 102(a) as being anticipated by Lockhart et al. ("Lockhart"). Claims 11-23 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Lockhart. Applicants respectfully traverse these rejections for at least the following reasons.

First, independent claims 1 and 24 recite generating a gene expression profile that includes for each of the polynucleotides: (i) a first value for a first polynucleotide characteristic, (ii) a second value for a second polynucleotide characteristic different from the first characteristic, and (iii) a third value that is a measure of the quantity of the polynucleotide. Figure 2 of Lockhart discloses a fluorescence image of an array with more than 16,000 probes. While the surface bound oligonucleotides (or probes) are distributed over the image array, there is no disclosure of determining a first value for a first polynucleotide characteristic and a second value of a different second polynucleotide characteristic. At best, Lockhart discloses the determination of a third value that is a measure of a quantity of the polynucleotide. In this context, such characteristics of a polynucleotide include, for example, independent characteristics of mDNAs or cDNAs, such as, sequence identifiers as one characteristic and a measure of the size as a second characteristic. See, for example, page 19, lines 1-5 of the specification.

It should be noted that Lockhart's array is an arbitrary thing without distinction in the two dimensions that define the positions of the probes in the checkerboard pattern shown in the figure. As such Lockhart does not disclose or suggested the features recited in the pending claims. Furthermore, it should also be noted that applicants have amended the claims to better define their invention and not to distinguish over the Lockhart reference since the applicants believe that the original claims were patentably distinguishable from Lockhart.

Second, claims 1 and 24 recite that for each polynucleotide, a position is calculated from the first and second values, and from the third value a peak at that position in a multi-dimensional display space is determined for display. Lockhart does not disclose calculating such a display position for a polynucleotide based on a first and second characteristic of a polynucleotide. In fact, as discussed above, Lockhart does not even disclose determination of a first and a second characteristic of a polynucleotide. Clearly, there is no such generation of a first and second characteristic of a polynucleotide, calculation of a display position based on the first and second characteristic values and displaying of a peak value representing quantity at that calculated position. Accordingly, the independent claims are patentable over the disclosure of Lockhart.

The dependent claims are also allowable over the relied-upon references at least because they depend, either directly or indirectly, from allowable claim 1, as discussed above. In addition, they recite additional patentable features when considered as a whole.

In view of the foregoing amendments and remarks, applicants respectfully submit that all of the pending claims are now in condition for allowance. An early notice to this effect is earnestly solicited. If there are any questions regarding the application, or if an examiner's amendment would facilitate the allowance of one or more of the claims, the examiner is courteously invited to contact the undersigned attorney at the local number below.

A Petition and fee for a three month extension of time is enclosed.

Respectfully submitted,

June 15, 2000

Date

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Should additional fees be necessary in connection with the filing of this paper, or if a petition for extension of time is required for timely acceptance of same, the Commissioner is hereby authorized to charge deposit account No. 19-0741 for any such fees; and applicants hereby petition for any needed extension of time.